ISSUES IN PUBLIC HEALTH

Is scaling up enough to curb the HIV epidemic in southern Africa?

Wim Delva, Carel Pretorius, Marleen Temmerman

We highlight key insights and provide some food for thought on 'Scaling up for success', the theme of the 4th Southern African AIDS Conference (Durban, 31 March - 3 April 2009), where over 4 000 scientists, field workers and activists presented and discussed research findings and best practices for HIV prevention, treatment and care in southern Africa.

Provenance and prospects of the HIV epidemic in South Africa

UNAIDS estimates that 18.1% of 15 - 49-year-old adults in South Africa were HIV positive in 2007.[1] Southern Africa's HIV epidemic was set in a historical and social context by Hargrove. He argued that the oscillating migration of a large workforce between rural areas and mines, farms and cities resulted in the disruption of family structures, creating a fertile ground for the rapid and wide-scale spread of HIV.[2] In addition to scaled up behavioural and biomedical interventions, structural measures aimed at restoring social capital and gender and health equity are essential to reducing HIV incidence.

Wim Delva is a medical doctor with a strong interest in statistics and epidemiological modelling of HIV prevention interventions. His work focuses on the role of partnership dynamics including concurrency in the spread of HIV and the impact of HIV prevention strategies. He is currently affiliated to the International Centre for Reproductive Health, Ghent University, Belgium, and the South African Centre for Epidemiological Modelling and Analysis, Stellenbosch University.

Carel Pretorius is an applied mathematician, based at the South African Centre for Epidemiological Modelling and Analysis. He specialises in the development and analysis of epidemiological models that investigate the importance of intergenerational sex and the complexities of the dual HIV/TB epidemic in South Africa.

Marleen Temmerman is Professor in Gynaecology at the Department of Obstetrics and Gynaecology, Ghent University Hospital, and director of the International Centre for Reproductive Health. This WHO collaborating centre conducts operational research in maternal, sexual and reproductive health.

Corresponding author: *W Delva (Wim.Delva@UGent.be)*

Concurrency, condoms and age differences

Johnson presented results from a mathematical model of the HIV epidemic in South Africa, showing that premarital and extramarital short-term relationships account for almost 80% of heterosexual HIV transmission in South Africa. This model indicates that halving the number of unprotected non-spousal sex acts through improved adherence to condom use would reduce HIV incidence by 36%.[3] Reports from a behavioural/biological surveillance survey in a peri-urban township in the Western Cape suggest that the formation of short-term, concurrent partnerships is associated with excessive alcohol consumption and female partners expecting or having received some form of material goods.[4] Further, age differences appear to be greater between casual partners than between primary partners. Another mathematical model, based on age difference data from a study in Gugulethu near Cape Town (M Kamupira, L Myer – unpublished data), pointed out that it is the variance of age differences between an individual and his/her sexual partners rather than the absolute age difference that is responsible for the sustainability of the HIV epidemic in South Africa.[5]

Behaviour change versus social transformation

Kippax argued, however, that unless we fully understand the social, cultural and economic context of multiple and concurrent partnerships, intergenerational sex, negotiation of condom use and commercial sex, and unless these insights are translated into context-specific health promotion tools, the impact of scaled-up HIV prevention methods may be compromised by suboptimal uptake and adherence to these methods.[6]

To date, academic institutions and donor organisations have invested comparatively little in trying to influence the social and economic roots of the HIV epidemic. Ensuring a stable family and safe neighbourhood, quality education and economic prosperity would help to make an HIV-negative generation possible. Kippax called for brave, long-term initiatives by donors, non-governmental organisations and researchers who are committed to inducing social transformation rather than merely attempting to influence the behaviour of individuals.

Equity, affordability and effectiveness of antiretroviral treatment

The scaling up of access to antiretroviral treatment (ART) was a central theme throughout the conference. In this issue of the *SAMJ*, Adam and Johnson estimate antiretroviral treatment coverage to have reached 40% in adults by mid-2008.[7] According to their mathematical model, 568 000 South Africans were receiving HIV treatment, a more than tenfold increase since 2004. However, coverage in some provinces (e.g. 26% in the Free State) was much lower than the national average. Also, the national coverage estimate falls to 22% if the guidelines of the Southern African HIV Clinicians Society are used to define eligibility to antiretroviral treatment (CD4 cell counts <350 cells/µl or WHO stage IV disease), rather than the Department of Health criteria (CD4 cell counts <200 cells/µl or WHO stage IV disease).[7] In another research article presented at the conference and published in this issue, Cornell *et al*. point out that ART continues to be initiated considerably later than recommended by the national and international guidelines owing to late presentation of HIV-positive patients, especially men and children.[8] Both articles demonstrate a clear need for centrally co-ordinated monitoring of the national ART programme.

Despite concerns about affordability of the HIV treatment coverage targets set out in the National Strategic Plan, both Wood and Hargrove made the case for earlier initiation of HIV treatment. While such approaches would add further financial and human resource pressure to southern Africa's already heavily burdened health care system, earlier treatment could save money in the long run, in addition to millions of life-years. Firstly, earlier treatment would reduce HIV-related morbidity and mortality, not least by reducing the incidence of tuberculosis (TB). Wood showed that an ART roll-out programme in a peri-urban community near Cape Town has resulted in a decrease in TB notifications. Early initiation of ART would therefore avert even more active TB cases, as a large proportion of HIV-positive individuals experience an episode of active TB before the onset of HIV treatment.[9] In a farm labour community in the Free State ART resulted in direct (through contribution to the labour market) and indirect (through non-commercial contributions to society) economic benefits.[10] Much earlier initiation of treatment would reduce the infectiousness of HIV-infected individuals for a longer period of time. The resulting impact on the HIV incidence in the population would thereby drastically reduce the future need for HIV treatment.[2]

The long road ahead

Former Minister of Health Barbara Hogan reaffirmed the South African government's commitment to implement its National Strategic Plan to fight HIV/AIDS, especially in this era of global economic crisis. The research community too is more committed than ever to roll back the impact of the epidemic in southern Africa. Scaling up treatment and prevention efforts that are known to be effective is undoubtedly necessary for success, but it may not be sufficient. We must continue to vigorously explore newer, subtler, more insightful approaches to HIV prevention.

1. UNAIDS/World Health Organization. *Epidemiological Fact Sheets on HIV and AIDS, 2008 Update*. Geneva: UNAIDS/WHO, 2008. http://apps.who.int/globalatlas/predefinedReports/EFS2008/full/EFS2008_ZA.pdf (accessed 29 June 2009).
2. Hargrove J. The HIV epidemic in South Africa – provenance and prospects. Paper presented at the 4th Southern African AIDS Conference, 31 March - 3 April 2009, Durban. http://www.saaids.com/images/stories/4th_SA_AIDS_Conference_presentations/hargrove.pdf (accessed 29 June 2009).
3. Johnson L, Dorrington R, Bradshaw D, Pillay-Van Wyk V, Rehle T. Sexual behaviour patterns in South Africa and their effect on the spread of HIV: insights from a mathematical model. Paper presented at the 4th Southern African AIDS Conference, 31 March - 3 April 2009, Durban.
4. Townsend L, Mathews C, Johnston L, Chopra M. The co-occurrence of heavy alcohol use and risky sexual behaviours among a sample of heterosexual men who have multiple female partners in Cape Town, South Africa. Paper presented at the 4th Southern African AIDS Conference, 31 March - 3 April 2009, Durban.
5. Pretorius C, Delva W, Verguet S, Hargrove J, Williams B. Intergenerational sex and the epidemic of HIV. Paper presented at the 4th Southern African AIDS Conference, 31 March - 3 April 2009, Durban.
6. Kippax S. Sex at the heart of HIV. Paper presented at the 4th Southern African AIDS Conference, 31 March - 3 April 2009, Durban. http://www.saaids.com/images/stories/4th_SA_AIDS_Conference_presentations/susan%20kippaxnew.pdf (accessed 29 June 2009).
7. Adam MA, Johnson LF. Estimation of adult antiretroviral treatment coverage in South Africa. *S Afr Med J* 2009; 99: 661-667. (this issue).
8. Cornell M, Technau, K, Fairall L, *et al*. Monitoring the South African antiretroviral programme 2003 – 2007: The IeDEA Southern Africa Collaboration. *S Afr Med J* 2009; 99: 653-660 (this issue).
9. Wood R. HIV/TB control – can it be achieved in South Africa? Paper presented at the 4th Southern African AIDS Conference, 31 March - 3 April 2009, Durban.
10. Booysen F. Labour market outcomes among adults enrolled in the Free State province's public sector antiretroviral treatment (ART) programme (2004-2008). Paper presented at the 4th Southern African AIDS Conference, 31 March - 3 April 2009, Durban.